

ADDITIONS TO THE VASCULAR FLORA OF OKLAHOMA

R. JOHN TAYLOR AND CONSTANCE E. TAYLOR

Biology Department, Southeastern Oklahoma State University
Durant, Oklahoma 74701

ABSTRACT

Forty-seven new taxa are reported to the Oklahoma flora and specimens of four additional taxa are cited which verifies their present occurrence in the state. The fifty-one taxa are as follows: *Lycopodium adpressum*, *Potamogeton natans*, *Cenchrus echinatus*, *Panicum verrucosum*, *Eleocharis smallii*, *Eleocharis tortilis*, *Scirpus supinus*, *Rhynchospora gracilentia*, *Rhynchospora rariflora*, *Scleria muhlenbergii*, *Scleria verticillata*, *Carex decomposita*, *Carex leptalea*, *Carex Swanii*, *Wolffia punctata*, *Eriocaulon decangulare*, *Juncus capitatus*, *Melanthium virginicum*, *Burmannia capitata*, *Habenaria repens*, *Spiranthes odorata*, *Glinus radiatus*, *Paronychia Drummondii*, *Tillaea aquatica*, *Parnassia grandifolia*, *Aeschynomene indica*, *Amorpha paniculata*, *Colutea arborescens*, *Geranium dissectum*, *Polygala cruciata*, *Bowlesia incana*, *Eryngium integrifolium*, *Cynoctonum sessilifolium*, *Lysimachia quadriflora*, *Phlox paniculata*, *Scutellaria integrifolia*, *Linaria canadensis* var. *canadensis*, *Bacopa monnieri*, *Epifagus virginiana*, *Utricularia inflata*, *Utricularia subulata*, *Aster ptarmicoides*, *Cirsium muticum*, *Euthamia graminifolia*, *Euthamia leptoccephala*, *Evax candida*, *Onopordum acanthium*, *Solidago arguta* var. *Boottii*, *Solidago flexicaulis*, *Solidago gigantea* var. *gigantea*, *Solidago patula* var. *strictula*.

The following taxa are thought to be newly reported to the Oklahoma flora. Four of these taxa are listed as occurring in the state by other sources, but no specimens were cited or no specimens can be located in Oklahoma herbaria. Further, they are not treated as occurring in our flora or they are treated as doubtful in the most recent manual (Waterfall, 1969). All specimens cited were collected by John and Connie Taylor unless otherwise indicated, and are deposited at the Southeastern Oklahoma State University Herbarium (DUR). Duplicates of most have been sent to SMU, NELU, VDB, and KANU.

Most of these species were collected from eight hillside bogs in Atoka, Choctaw, McCurtain, and Pushmataha counties in southeastern Oklahoma. These bogs have developed mainly on sandy formations of the old Gulf Coastal Plain. They form along the flanks of very small drainage systems near their upper ends, and some of them contain several feet of peat. The bogs range in size from about an acre to over 40 acres. They may be forested, but grasses, sedges, and other herbaceous species compose the vegetation of most of them. There are 20 of these bog habitats known to the authors in southeastern Oklahoma.

The remainder of the species were collected from various habitats throughout the state. Most of the taxa occur in the Gulf Coastal Plain area of Texas and represent extensions of their known range northward and westward into

Oklahoma. We have relied on three manuals for nomenclature: Correll & Johnston, 1970; Correll & Correll, 1972; and Steyermark, 1963.

LYCOPODIUM ADPRESSUM (Chapm.) Lloyd & Underw. ATOKA CO.: edge of bog, 0.5 mi NW of Boehler, 26 Mar 1975, *J. & C. Taylor 18217*; and bog 0.5 mi SW of Boehler, 10 Jun 1976, *J. & C. Taylor 21709*. This species is very similar to *L. alopecuroides* and it has been treated as a variety of that species.

POTAMOGETON NATANS L. MCCURTAIN CO.: Yashaw Creek, 2.5 mi S of Broken Bow, 20 Jul 1976, *J. & C. Taylor 22750*; PUSHMATAHA CO.: small creek 2 mi SE of Clayton and about 130 m W of US hwy. 271, 9 Aug 1976, *J. & C. Taylor 23047*. This species is listed for Choctaw Co., Oklahoma by Correll & Correll (1972) but we found no Oklahoma specimens in our state herbaria.

CENCHRUS ECHINATUS L. MCCURTAIN CO.: edge of blind lake along the Red River, 3.5 mi E and 8.5 mi S of Idabel, 2 Aug 1976, *J. & C. Taylor 22837*. This is a weedy species of the coastal plain.

PANICUM VERRUCOSUM Muhl. CHOCTAW CO.: wooded bog, 4 mi NE of Swink, 4 Sep 1975, *J. & C. Taylor 20445*. This species is similar to *P. brachyanthum* which grows in similar habitats, but can be differentiated from that species by its smaller spikelets and lack of pubescence. Both panicles are species of the southeastern United States.

ELEOCHARIS SMALLII Britt. CHOCTAW CO.: collected from a sandy well drained roadside 2 mi E of Hugo, 10 May 1969, *J. Askew 116*. The species was determined by Barney Lipscomb. It is a wide ranging species of the northeastern United States, west to Illinois and southern Missouri.

ELEOCHARIS TORTILIS (Link) Schult. ATOKA CO.: bog about 0.5 mi SW of Boehler, 10 Jun 1976, *J. & C. Taylor 21711*. This species was determined by Barney Lipscomb. It is another plant of the coastal plain area of the United States.

SCIRPUS SUPINUS L. var. HALLII (Gray) Gray. ATOKA CO.: edge of a shallow water filled sandy depression in an open forest, 0.25 mi S of Boehler, 23 May 1975, *J. & C. Taylor 18541*. The very small form of *Echinodorus tenellus* grew with this species along the edge of these depressions. Species was determined by Barney Lipscomb. *Scirpus saximontanus*, which also occurs in Oklahoma, has been treated as a second variety of this species of the coastal plain area.

RHYNCHOSPORA GRACILENTA Gray. CHOCTAW CO.: bog 11 mi NW of Hugo, 22 Aug 1976, *J. & C. Taylor and J. R. Wright 23235*. PUSHMATAHA CO.: bog 3 mi S and 7.5 mi W of Antlers, 23 Jul 1976, *J. & C. Taylor 22774*. This is a species of bogs and similar habitats of the coastal plain area of the United States.

RHYNCHOSPORA RARIFLORA (Michx.) Ell. ATOKA CO.: from a bog, 0.5 mi SW of Boehler, 10 Jun 1976, *J. & C. Taylor 21710*; PUSHMATAHA CO.: bog on the north side of the county road, 3 mi S and 7.5 mi W of Antlers,

23 Jul 1976, J. & C. Taylor 22773. The range and habitat is similar to the preceding species.

SCLERIA MUHLENBERGII Steud. ATOKA CO.: bog 0.5 mi NW of Boehler, 13 Aug 1976, J. & C. Taylor 23202; PUSHMATAHA CO.: bog 5.5 mi W of Antlers, 1 Sep 1976, J. Taylor 23387; CHOCTAW CO.: bog 11 mi N of Hugo, 22 Aug 1976, J. & C. Taylor and J. R. Wright 23238, and from a bog 11.5 mi NW of Hugo, 2 Oct 1976, J. & C. Taylor 23803. This distinctive member of the genus *Scleria* is another species of coastal plain bogs and similar habitats. In bogs of Atoka and Pushmataha counties, this species, the two *Rhynchosporas* above, and *Dulichium arundinaceum* grow in mixed stands.

SCLERIA VERTICILLATA Muhl. CHOCTAW CO.: bog 11 mi W of Hugo, 22 Aug 1976, J. & C. Taylor and J. R. Wright 23236. This coastal plain species is equally rare in Texas (Correll & Correll, 1972) and in Missouri (Steyermark, 1963), but seems to be most abundant in the coastal plain habitats throughout the eastern half of the United States.

CAREX DECOMPOSITA Muhl. ATOKA CO.: edge of a bog 0.5 mi NW of Boehler, 6 May 1975, J. Taylor 18447. At this location it grew in a few inches of standing water with *Hottonia inflata* and *Peplis diandra*. This relatively large *Carex* of the eastern United States is reported to be rare (Correll & Correll, 1972).

CAREX LEPTALEA Wahlen. ATOKA CO.: bog 0.5 mi SW of Boehler, 15 May 1976, J. & C. Taylor 21305; CHOCTAW CO.: bog 4 mi NE of Swink, 2 Aug 1976, J. & C. Taylor 22879. At the Atoka Co. location *C. leptalea* grew at the edge of clumps of *Osmunda cinnamomea*, *O. regalis*, *Lorinseria areolata* and *Onoclea sensibilis*. These four fern species occur in most of the bogs we have studied, the last two found as far west as Marshall County.

CAREX SWANII (Fern.) Mack. MCCURTAIN CO.: floodplain forest along the west fork of the Glover River, 0.5 mi W of Battiest, 16 May 1972, J. & C. Taylor 10375. This species was determined by Dr. David Castaner. Its habitat is moist forests of the northeastern United States.

WOLFFIA PUNCTATA Griseb. ATOKA CO.: open water of a bog 0.5 mi NW of Boehler, 1 Nov 1976, J. & C. Taylor 23965. It was found growing with *Azolla caroliniana*, *Limnobium spongia*, and species of *Lemma* and *Spirodelia*. Correll & Correll (1972) list McCurtain Co., Oklahoma as part of its range, but we found no Oklahoma specimens in state herbaria.

ERIOCAULON DECANGULARE L. PUSHMATAHA CO.: bog on the south side of a county road, 3 mi S and 7.5 mi W of Antlers, 7 Jul 1976, J. & C. Taylor 22410; and a bog 5.5 mi W of Antlers 22 Aug 1976, J. & C. Taylor 23252. At both of these locations it was found growing with the small, rare, and endangered *E. kornickianum*, and with *Peltandra virginica* and *Iris virginica*.

JUNCUS CAPITATUS Weigel. MCCURTAIN CO.: along the moist, sandy roadside, 0.5 mi S of Moon, 29 Apr 1975, J. Taylor 18405. Species determined by Barney Lipscomb. This small *Juncus* is an introduction from Europe. It is reported to be rare in Texas where it is infrequently collected.

MELANTHIUM VIRGINICUM L. CHOCTAW CO.: from a bog 11 mi NW of Hugo, 22 Aug 1976, J. & C. Taylor and J. R. Wright 23213. These plants were about 4 feet tall and grew with *Spartina pectinata*, *Verbena hastata*, and *Veronicastrum virginicum*.

BURMANNIA CAPITATA (Walt.) Mart. PUSHMATAHA CO.: in bog 5.5 mi W of Antlers, 1 Sep 1976, J. Taylor 23390. This species was growing among grasses and sedges with such species as *Selaginella apoda*, *Eriocaulon kornickianum*, and *Bartonia paniculata*.

HABENARIA REPENS Nutt. ATOKA CO.: bog at edge of beaver pond, 0.5 mi NW of Boehler, 26 Oct 1974; J. & C. Taylor 17262. This is a large bog orchid of the coastal plain area in the United States.

SPIRANTHES ODORATA Nutt. CHOCTAW CO.: bog 11.5 mi NW of Hugo, 2 Oct 1976, J. & C. Taylor 23799. Species determined by Dr. Larry Mcgrath. While treated as a variety of *S. cernua* by Correll (1950), Leur (1975) feels that this taxon should be considered a separate species.

GLINUS RADIATUS (R. & P.) Rohrb. MCCURTAIN CO.: Big Grassy Lake (presently being drained) 4.5 mi E, 3.4 mi S of Tom, 2 Aug 1976, J. & C. Taylor 22871. Species determined by Wm. F. Mahler.

PARONYCHIA DRUMMONDII T. & G. ATOKA CO.: in an open sandy upland forest 130 m from the Boehler intersection, 6 May 1975, J. & C. Taylor 18437. The soil at this location is derived from the Antlers Sand Formation, with a very light, sandy, topsoil. The forest is composed of widely spaced trees with *Quercus incana*, *Sassafras albidum*, and stands of *Vaccinium arboreum* being abundant. The vegetation of the open areas is sparse and composed mainly of low herbaceous species. This type of habitat is very common on the Antlers Sand Formation of Atoka, Choctaw, and Pushmataha Counties. Some of the species that grow with *P. drummondii* at the Atoka Co. location are as follows: *Selaginella riddellii*, *Triplasis purpurea*, *Aristolochia reticulata*, *A. serpentaria*, *Eriogonum multiflorum*, *Polygonella americana*, *Leoflingia squarrosa*, *Polanisia erosa*, *Crotonopsis linearis*, and *Penstemon murrayanus*.

TILLAEA AQUATICA L. ATOKA CO.: edge of shallow, water filled sandy depression in an open forest, 0.25 mi S of the Boehler intersection, 23 May 1975, J. & C. Taylor 18542A.

PARNASSIA GRANDIFOLIA DC. CHOCTAW CO.: abundant in bog 11 mi NW of Hugo, 22 Aug 1976, J. & C. Taylor and J. R. Wright 23223; 14 Sep 1976, J. & C. Taylor 23596; and 2 Oct 1976, J. & C. Taylor 23797.

AESCHYNOMENE INDICA L. MCCURTAIN CO.: edge of a rice field near the dam of Barney Ward Lake, 1.5 mi SW of Tom, 19 Oct 1974, J. & C. Taylor 17208. Growing with this species was *Cuscuta attenuata* and *Ipomoea wrightii*.

AMORPHA PANICULATA T. & G. MCCURTAIN CO.: grazed field east of Barney Ward Lake, about 1.3 mi SW of Tom, 4 Jun 1976, J. & C. Taylor 21590.

COLUTEA ARBORESCENS L. CIMARRON CO.: rocky draw about 0.5 mi E of Kenton, population covering about one acre, 19 Jun 1976, *J. Taylor* 22040.

GERANIUM DISSECTUM L. MCCURTAIN CO.: edge of a rice field near the dam of Barney Ward Lake, 1.5 mi SW of Tom, 29 Apr 1975, *J. & C. Taylor* 18413.

POLYGALA CRUCIATA L. PUSHMATAHA CO.: bog 5.5 mi W of Antlers, 22 Aug 1976, *J. & C. Taylor and J. R. Wright* 23243.

BOWLESIA INCANA Ruiz. & Pav. COTTON CO.: base of *Tamarix gallica* growing in floodplain of the Red River just W of the US hwy. 277 and 281 bridge, SW of Randlett, 2 May 1976, *J. & C. Taylor* 21166.

ERYNGIUM INTEGRIFOLIUM Walter. Reported by Goodman (1974) based on *E. J. Palmer* 8998 (MO). We have collected it from PUSHMATAHA CO.: bog on west side of road, 10.5 mi N and 1 mi W of Soper, 4 Sep 1975, *J. & C. Taylor* 20461; and bog 5.5 mi W of Antlers, 1 Sep 1976, *J. Taylor* 23379, CHOCTAW CO.: bog 11 mi NW of Hugo, 14 Sep 1976, *J. & C. Taylor* 23603.

CYNOCTONUM SESSILIFOLIUM Walter ex J. F. Gmelin. ATOKA CO.: bog 0.5 mi NW of Boehler and 20 mi SE of Atoka, 13 Aug 1976, *J. & C. Taylor* 23200.

LYSIMACHIA QUADRIFLORA Sims. CHOCTAW CO.: bog 11 mi NW of Hugo, 22 Aug 1976, *J. & C. Taylor and J. R. Wright* 23237; and *J. & C. Taylor* 23614, 14 Sep 1976. Ray (1956) lists this species for Arkansas.

PHLOX PANICULATA L. MCCURTAIN CO.: southwest bank of the Mt. Fork River about 8 mi NE of Smithville, 21 Oct 1976, *J. Taylor* 23958. Listed by Waterfall (1969) as seen only from cultivation.

SCUTELLARIA INTEGRIFOLIA L. MCCURTAIN CO.: from 2.7 mi N of Tom, 4 Jun 1976, *J. & C. Taylor* 21605. The plants were growing with *Eustylis purpurea*.

LINARIA CANADENSIS (L.) Dum. var. CANADENSIS. ATOKA CO.: sandy soil near the edge of a bog 0.5 mi NW of Boehler, 6 May 1975, *J. & C. Taylor* 18450, and from an open sandy upland forest 130 m S of the Boehler intersection, 23 May 1975, *J. & C. Taylor* 18521. This taxon may be easily distinguished from *L. texana* (*L. c.* var. *texana*) by its smaller purple flowers and in our area always in very sandy soil.

BACOPA MONNIERI (L.) Penn. MCCURTAIN CO.: along the 1941 cut-off blind lake of the Red River, 3.5 mi E and 8.5 mi S of Idabel, 2 Aug 1976, *J. & C. Taylor* 22826. It was found growing with *Stenotaphrum secundatum*.

EPIFAGUS VIRGINIANA (L.) Bart. MCCURTAIN CO.: southwest bank of the Mt. Fork River about 8 mi NE of Smithville, 21 Oct 1976, *J. Taylor* 23960. Two clumps were found growing under a large beech tree. It has been known previously close by in Arkansas.

UTRICULARIA INFLATA Walt. ATOKA CO.: very abundant in a shallow water filled sandy depression in an open forest 0.25 mi S of the Boehler

intersection, 6 May 1975, *J. & C. Taylor 18433*. An additional sheet of this species was found in our herbarium from MCCURTAIN CO.: swamp, 2.5 mi S of Eagletown, 17 Jun 1967, *Johnson 90*.

UTRICULARIA SUBULATA L. ATOKA CO.: bog 0.5 mi NW of Boehler, 6 May 1975, *J. Taylor 18449*; PUSHMATAHA CO.: bog 5.5 mi W of Antlers, 1 Sep 1976, *J. & C. Taylor 23392*. This small terrestrial species was growing among *Lycopodium adpressum* at the Atoka location and with *Burmanna capitata* and *Bartonia paniculata* in Pushmataha County.

ASTER PTARMICOIDES (Nees) T. & G. JOHNSTON CO.: established on the Baum Limestone, 2.9 mi NW of Mansville, 7 Sep. 1973, *J. & C. Taylor 14856*. At OKL, two additional sheets were found in the *Aster* innumen folder from the same location: *Perino & Massey 846*, 13 May 1971; and *J. Williams 525* (marked *A. ptarmicoides*), 4 Sep 1971. This species was not present in the area in 1960 when the senior author was researching the Grassland Communities on the Baum Limestone (Taylor & Penfound, 1961). Anderson and Creech (1975) believe this species is more closely related to *Solidago* than *Aster*.

CIRSIUM MUTICUM (Michx.) Pers. CHOCTAW CO.: bog 11 mi NW of Hugo, 22 Aug 1976, *J. & C. Taylor and J. R. Wright 23229*; and 14 Sep 1976, *J. & C. Taylor 23609*.

EUTHAMIA GRAMINIFOLIA (L.) Nutt. CHOCTAW CO.: bog 11 mi NW of Hugo, 22 Aug 1976, *J. & C. Taylor and J. R. Wright 23216*; PUSHMATAHA CO.: bog 5.5 mi W of Antlers, 1 Sep 1976, *J. & C. Taylor 23370*. Very isolated and disjunct from its distribution in the northern and eastern United States, the closest population occurring in northern Missouri.

EUTHAMIA LEPTOCEPHALA (T. & G.) Greene. CHOCTAW CO.: at Unger between US hwy. 70 and the railroad track, 5 Nov 1971, *J. & C. Taylor 9416*; MCCURTAIN CO.: Barney Ward Lake, 2 mi W of Tom, 22 Jul 1972, *J. & C. Taylor 11121*. We include the citation of these specimens to clarify the status of this species in Oklahoma. Waterfall (1969) includes this taxon as part of the *E. gymnospermoides* complex. Sieren (1970) and Taylor (1975) offer conclusive evidence of its distinctness. At the Unger location, both *E. leptocephala* and *E. gymnospermoides* were growing intermixed together. Occupation of the same habitat has been noted both in Texas and in Louisiana, but no evidence of intergradation has been observed.

EVAX CANDIDA (T. & G.) Gray. ATOKA CO.: sandy open forest about 130 m S of the Boehler intersection, 23 May 1975, *J. & C. Taylor 18523*.

ONOPORDUM ACANTHIUM L. ROGER MILLS CO.: roadside about 2.5 mi W of Strong City, 18 Jun 1976, *J. Taylor 21868*. This weedy thistle is known from Kansas and Texas, so its occurrence in Oklahoma was to be expected. It is a native of Europe.

SOLIDAGO ARGUTA Ait. var. BOOTHII (Hook.) Pal. & Stey. Not currently considered a part of the Oklahoma flora, but reported as early as 1900 as

S. Bootii by Bogue. *Solidago arguta* was used in Van Vleet's list in 1902. Our specimen J. & C. Taylor 14928 from LEFLORE CO. north flank of Blue Bouncer Mt. along a branch of Eagle Fork Creek, 11 mi NE of Octavia, 18 Sep 1973, documents this taxon as a valid member of the Oklahoma Flora. It has since been collected from MCCURTAIN CO. along Mt. Fork River, Beavers Bend State Park, 18 Sep 1976, J. & C. Taylor 23628; CHEROKEE CO.: stream below McSpadden Falls, 6 Sep 1976, J. & C. Taylor 23401. It has been seen and identified elsewhere in the Ouachita Mts. and Ozark Plateau of Oklahoma. It should not be considered as rare.

Bogue had annotated his *S. Bootii* "Frequent in dry shaded situations," the name evidently being misapplied to *S. ulmifolia* (*S. delicatula*) which is very common throughout east central Oklahoma in the dryer blackjack-post oak forests. The var. *Bootii* is found in the moister habitats of stream bottoms in oak-hickory forests and blooms later in the fall, after the late summer flowering of *S. ulmifolia* is nearly terminated.

SOLIDAGO FLEXICAULIS L. MCCURTAIN CO.: along the west bank of the Mt. Fork River, 8 mi NE of Smithville, 21 Oct 1976, J. & C. Taylor 23961.

SOLIDAGO GIGANTEA Ait. var. GIGANTEA. MCCURTAIN CO.: roadside ditch, 2.8 mi N of Tom, 14 Sep 1974, J. & C. Taylor 16996; CHOCTAW CO.: bog 11 mi NW of Hugo, 22 Aug 1976, J. & C. Taylor 23226. The pubescence on the stems and leaves separates this variety from the very common glabrous stem and leaved *S. g.* var. *leiophylla*.

SOLIDAGO PATULA Muhl. var. STRICTULA T. & G. MCCURTAIN CO.: disturbed roadside with windrows of bulldozed trees, along hwy. 87, 2 mi S and 0.4 mi W of Tom, 18 Sep 1976, J. & C. Taylor 23641.

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